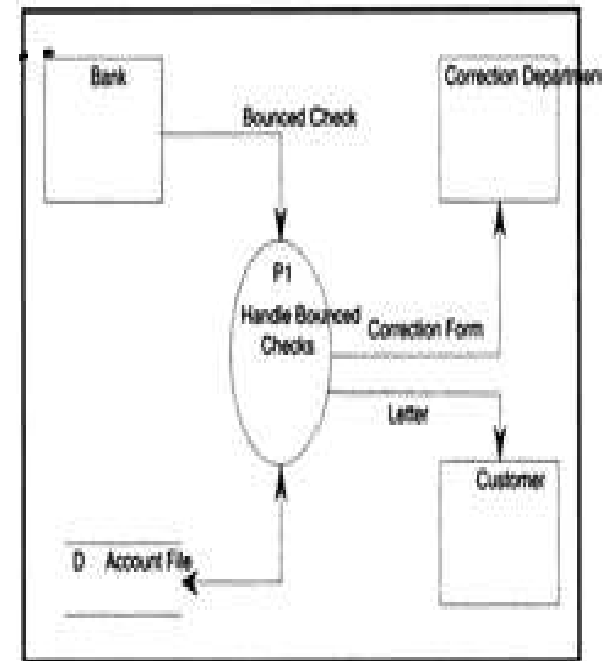


# **DATA FLOW DIAGRAMS**

## DEFINITION

- it was a way to represent a **process graphically**.
- The DFD is one of the first—if not *the first*—tools that the analyst will use for drawing graphical representations of the user's requirements.
- It is typically used very early in the design process when the user requirements are **not clearly** and logically defined.



DFD



# HOW DO WE BEGIN TO CONSTRUCT THE DFD?

five steps :

- 1) Draw the process you are about to define.
- 2) Ask yourself what thing(s) initiate the process: what is coming in?
- 3) Determine the process outputs.
- 4) Establish all files, forms or other components that the process needs .
  - These are usually data stores that are utilized during processing.
- 5) Name and number the process by its result.
  - For example, if a process produces invoices, label it "Create Invoices."

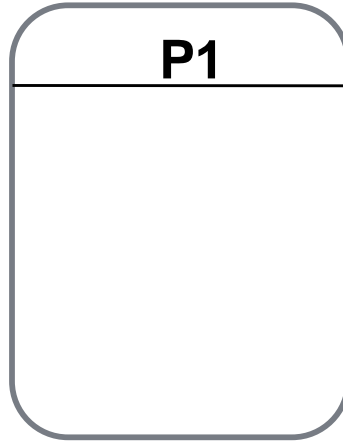


## EXAMPLE

- Vendors send Mary invoices for payment. Mary stamps on the invoice the date received and matches the invoice with the original purchase order request. Invoices are placed in the Accounts Payable folder. Invoices that exceed thirty days are paid by check in two week intervals.



## *STEP 1: DRAW THE PROCESS*



## STEP 2: DETERMINE THE INPUTS

- In this example we **are receiving an invoice from a Vendor**. The Vendor is considered a Terminator since it is a boundary of the input and the user cannot control when and how the invoice will arrive. The invoice itself is represented as a data flow coming from the Vendor terminator into the process as shown .

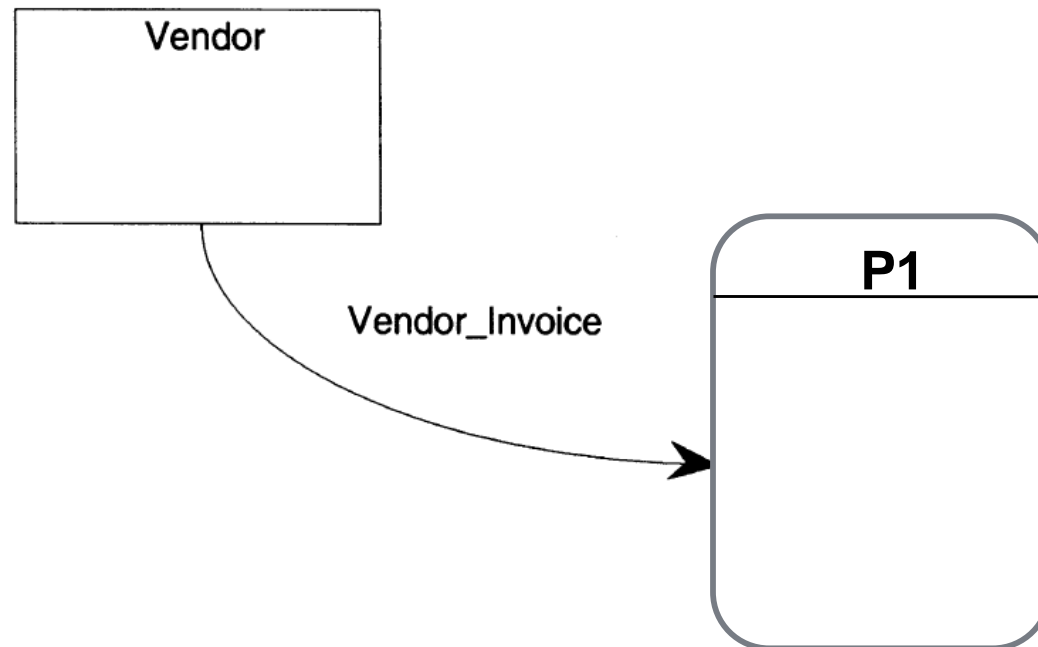


Figure 5.4 Terminator sending invoice to the process.

## *STEP 3: DETERMINE THE OUTPUTS OF THE PROCESS*

- In this case the result of the process is that the Vendor **receives a check for payment** as shown

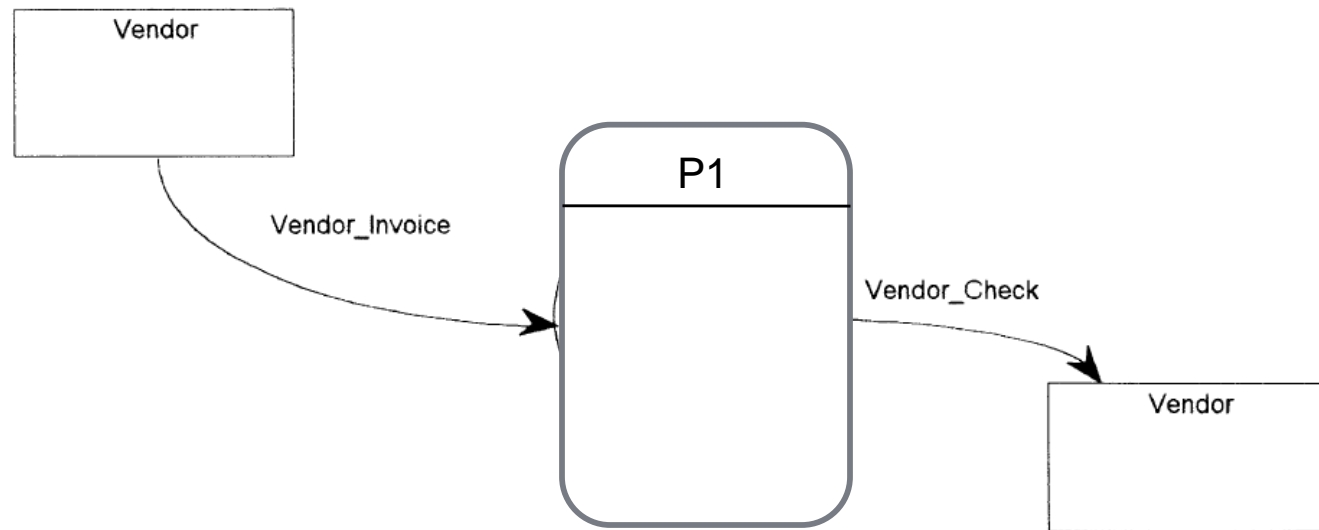
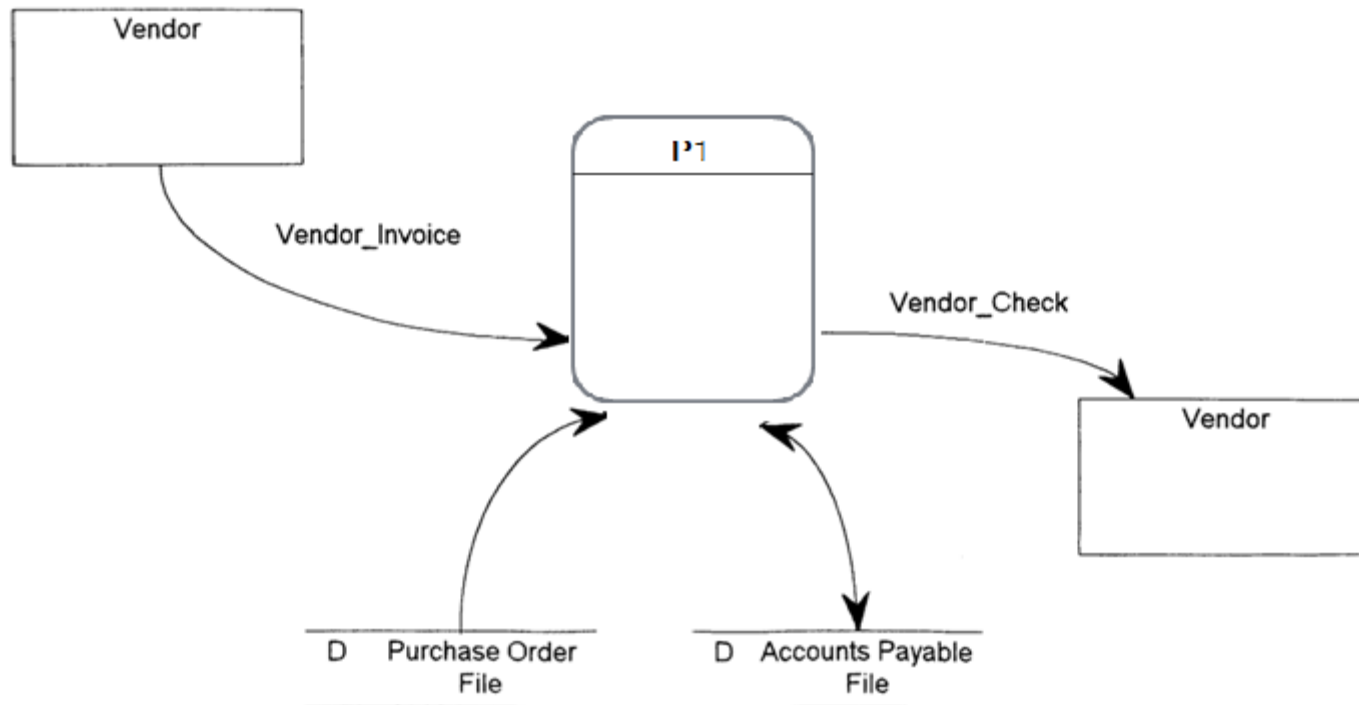


Figure 5.5 DFD with output of check sent to vendor.



## *STEP 4: DETERMINE THE “PROCESSING” ITEMS REQUIRED TO COMPLETE THE PROCESS*

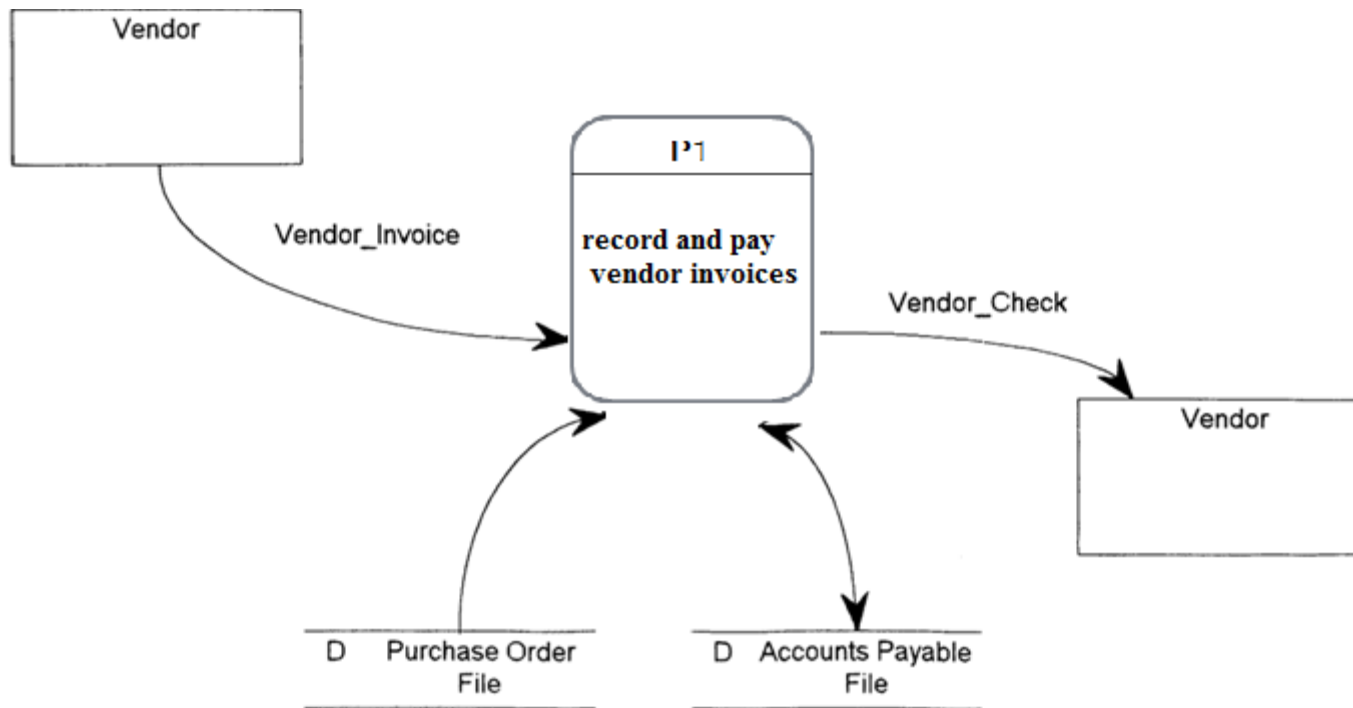
- In this example, the user needs to:
  - match the invoice to the original purchase order;
  - create a new account payable for the invoice in a file; and
  - eventually retrieve the invoice from the Accounts Payable file for payment.





*STEP 5: NAME AND NUMBER THE PROCESS BASED ON ITS OUTPUT OR ITS USER DEFINITION.*

- Final named DFD.



# ADVANTAGES OF THE DFD

- The concept is typically known as *top-down*, but the effort can also be conceived *as step-by-step*. The analyst must first understand the boundary and flows prior to doing anything else. The steps following this will procedurally **gather more detailed information** until the specification is complete.
- it represents a graphical display of the process and is therefore a usable document it can be used for **maintaining and enhancing** a process.



# DISADVANTAGES OF THE DFD

- it simply takes **a long time** to create especially when there is **a lot of leveling** to be performed .
- Therefore, many firms shy away from the DFD on the basis that it is **not practical**.





# **CASE1:THE PHARMACY AT MERCY HOSPITAL**

# THE SYSTEM SPECIFICATION

- The pharmacy at Mercy Hospital fills medical prescriptions for all patients and distributes these medications **to the nurse stations** responsible for the patient's care.
- Medical prescriptions are written **by doctors** and sent to the pharmacy. A pharmacy technician reviews the prescriptions and sends them to the appropriate pharmacy station.
- Prescriptions for drugs that must be formulated (made on site) are sent to the lab stations, prescriptions for off the shelf drugs are sent to the shelving station, and prescription for narcotics are sent to the secure station.

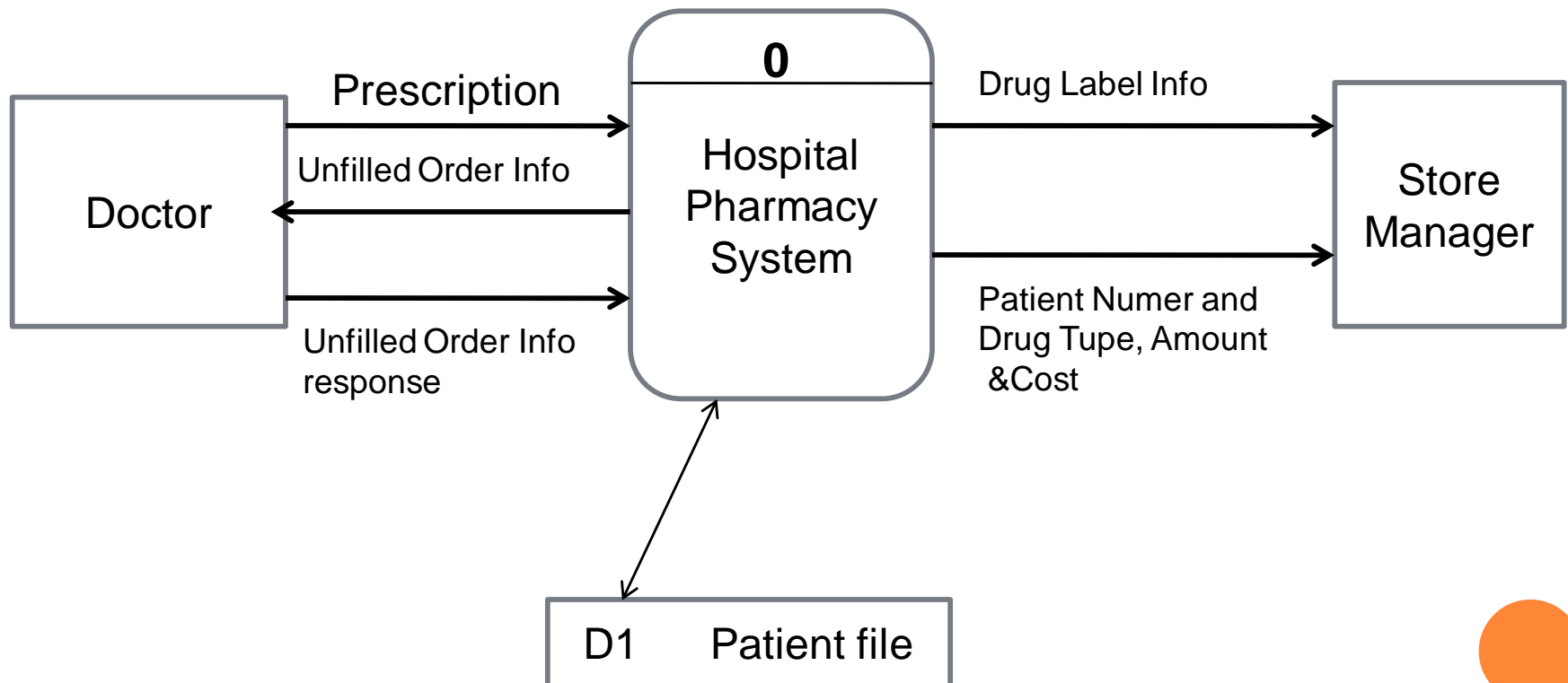


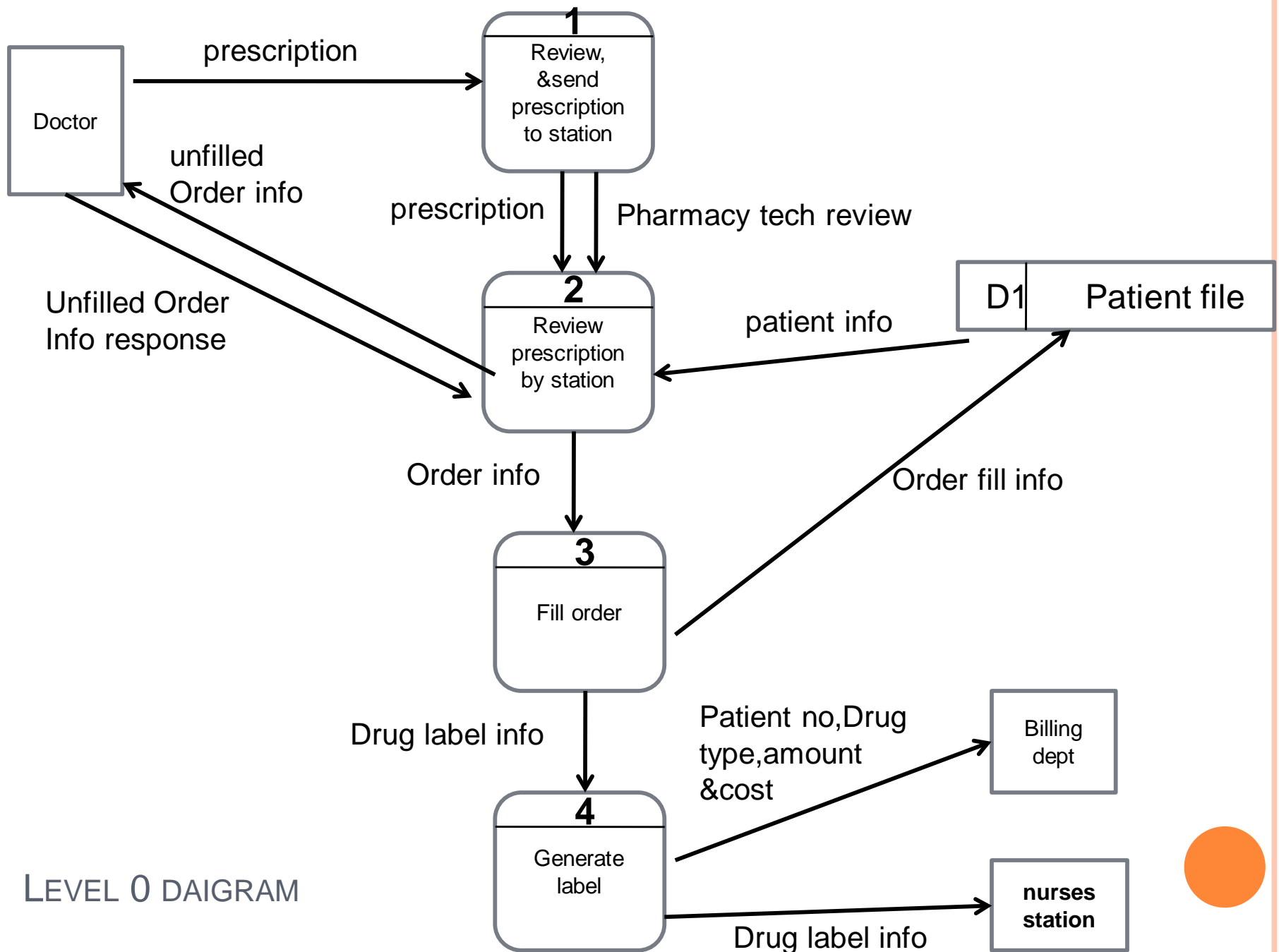
# THE SYSTEM SPECIFICATION

- At each station, a pharmacist reviews the order, check the patient's file to determine the appropriateness of the prescriptions, and fills the order if the dosage is at a safe level and is will not negatively interact with the other medications or allergies indicated in the patient's file.
- If the pharmacist does not fill the order, the prescribing doctor is contacted to discuss the situation. In this case, the order may ultimately be filled or the doctor may write another prescription depending on the outcome of the discussion.
- Once filled, a prescription label is generated listing the patient's name, the drug type, and dosage, an expiration date, and any special instructions. The label is placed on the drug container and the orders are sent to the appropriate nurse stations. The patients admission number, the drug type and amount dispensed, and the cost of the prescription are then sent to the billing department.

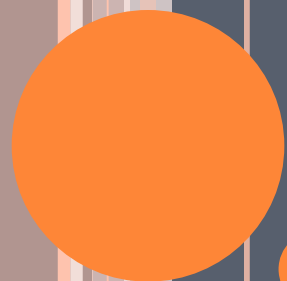


# CONTEXT DAIGRAM







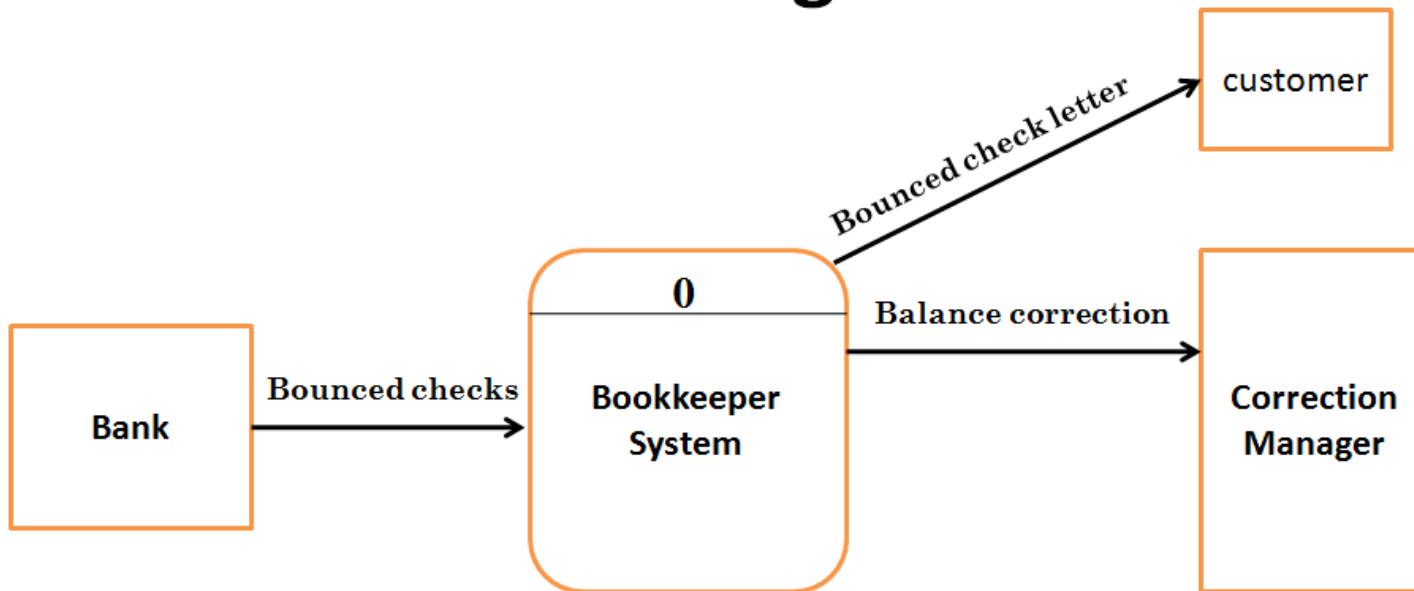


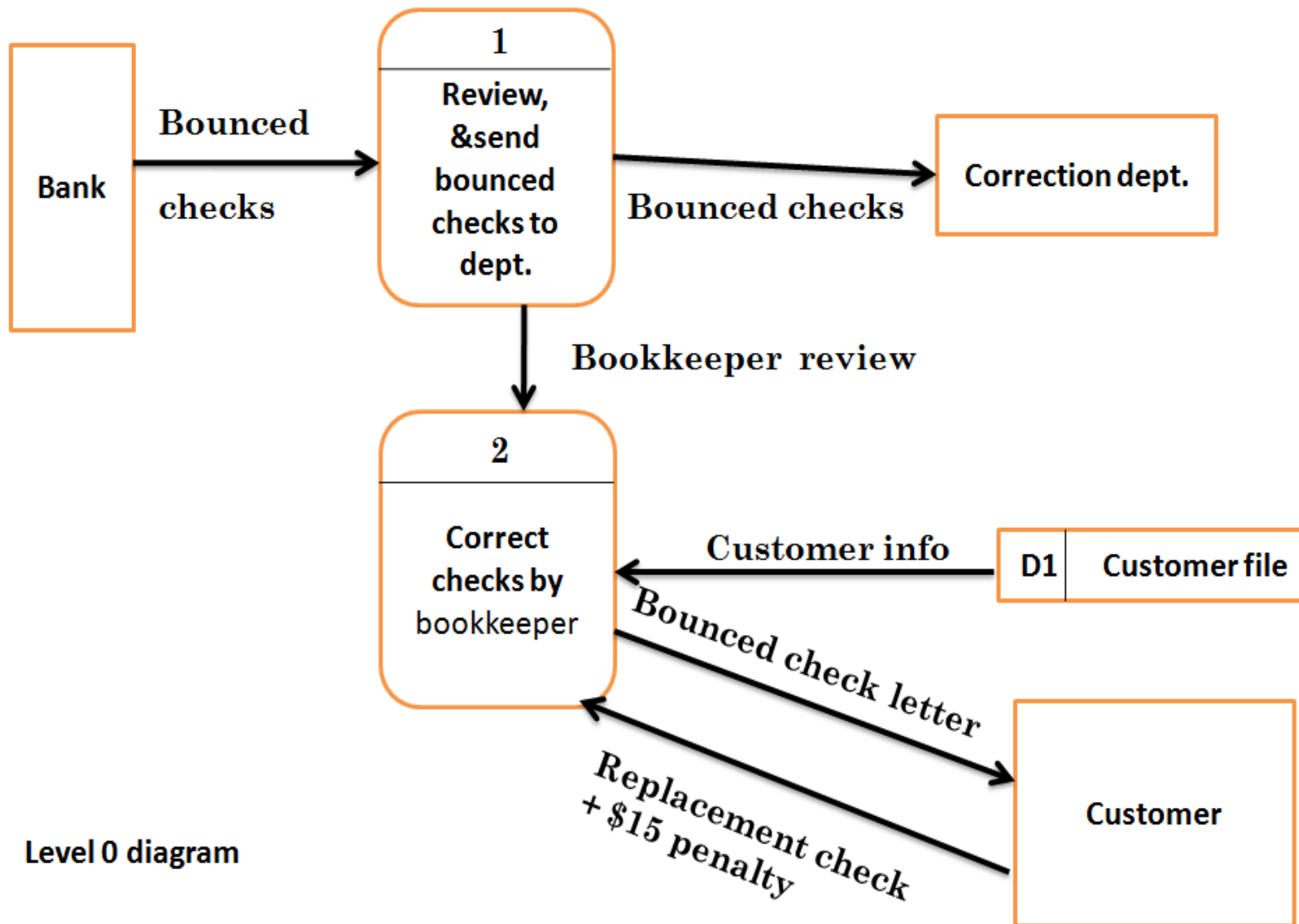
**BOOKKEEPER**

- For the following case study Draw Data flow diagram at all levels:
- Joe the bookkeeper receives bounced checks from the bank. He fills out a Balance Correction Form and forwards it to the Correction Department so that the outstanding balance can be corrected. Joe sends a bounced check letter to the customer requesting a replacement check plus a \$15.00 penalty (this is now included as part of the outstanding balance). Bounced checks are never re-deposited.



# Context Diagram





Level 0 diagram





# HELP DESK SYSTEM FOR CLIENTS

- Maximum Software is a developer and supplier of software products to individuals and businesses. As part of their operations, Maximum provides an 800 telephone number help desk for clients who have questions about software purchased from Maximum. When a call comes in, an operator inquires about the nature of the call. For calls that are not truly help desk functions, the operator redirects the call to another unit of the company such as Order Processing or Billing. Since many customers questions require in-depth knowledge of a product, help desk consultants are organized by product.



- The operator directs the call to a consultant skilled on the software that the caller needs help with. Since a consultant is not always immediately available, some calls must be put into a queue for the next available consultant. Once a consultant answers the call, he determines if this is the first call from this customer about this problem. If so, he creates a new call report to keep track of all the information about the problem. If not, he asks the customer for a call report number and retrieves the open call report to determine the status of the inquiry. If the caller does not know the call report number, the consultant collects other identifying information such as the caller's name, the software involved, or the name of the consultant who has handled the previous calls on the problem in order to conduct a search for the appropriate call report.

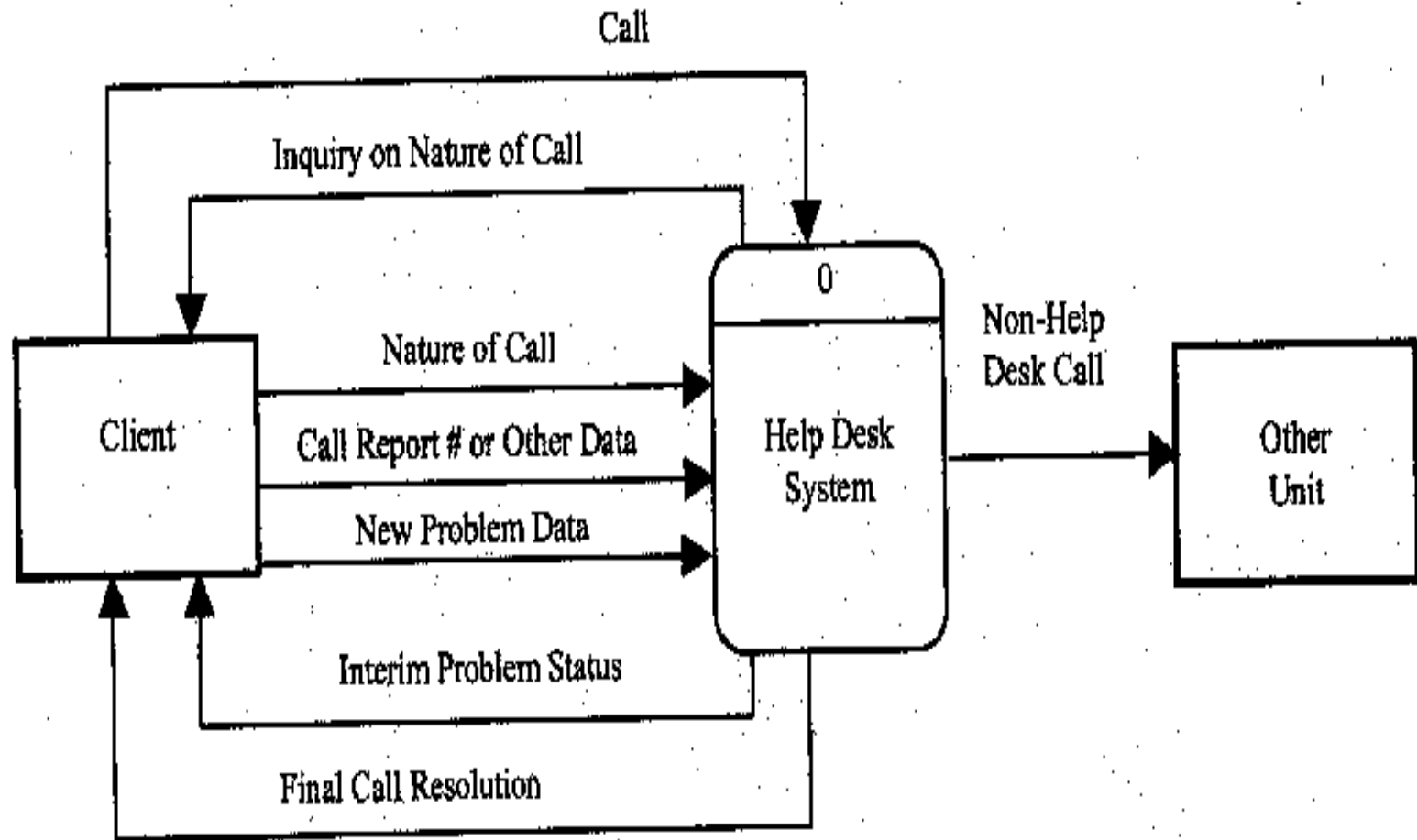


- If a resolution of the customer's problem has been found, the consultant informs the client what that resolution is, indicates on the report that the customer has been notified, and closed out the report. If resolution has not been discovered, the consultant finds out if the consultant handling this problem is on duty. If so, he transfers the call to the other consultant or puts the call into the queue of calls waiting to be handled by that consultant. Once the proper consultant receives the call, he records any new details the customer may have. For continuing problems and for new call reports, the consultant tries to discover an answer to the problem by using the relevant software and looking up information in reference manuals. If he can now resolve the problem, he tells the customer how to deal with the problem, and closes the call report. Otherwise, the consultant files the report for continued research and tells the customer that someone at Maximum will get back to him, or if the customer discovers new information about the problem, to call back identifying the problem with a specified call report number.





## Context Diagram



## Level-0 Diagram

